

# NATURAL HISTORY MISCELLANEA

Published by  
**The Chicago Academy of Sciences**

Lincoln Park - 2001 N. Clark St., Chicago 14, Illinois

---

No. 119

March 27, 1953

---

## A New Subspecies of Sidewinder, *Crotalus cerastes*, from Arizona

**Jay M. Savage and Frank S. Cliff\***

The subspecific status of southern Arizona populations of *Crotalus cerastes* has been questioned for some time. Klauber (1944, p. 102) in his revisional study of the species placed all sidewinders from this area in *Crotalus cerastes laterorepens*. He noted however, that Pima and Pinal County specimens had markedly fewer scale rows and ventrals than are found in *laterorepens* from the Colorado Desert. Hensley (1950, p. 288) also mentioned the lower scale counts in Pima County material and emphasized the fact that these rattlesnakes were closer in scutellation to *C. cerastes cerastes* of the Mojave Desert than to the Colorado Desert **form**. Both authors retained southern Arizona sidewinders within the limits of *laterorepens* because of the black color of the proximal rattle-matrix lobe in adults. The proximal lobe of the matrix is brown throughout life in typical *cerastes*.

Recently acquired specimens in the collections of Dr. Laurence M. Klauber of San Diego and the Natural History Museum of Stanford University have made possible a re-evaluation of the systematic position of southern Arizona *Crotalus cerastes*. Analysis of this material together with a large portion of Hensley's series, kindly loaned by Dr. Hobart M. Smith of the University of Illinois, convinces us that the examples from Maricopa, Pima and Pinal Counties, Arizona represent an entity subspecifically distinct from both the Mojave (*cerastes*) and Colorado (*laterorepens*) Desert forms.

Since the new subspecies agrees in all but a few points with *C. c. laterorepens* we depart from preferred systematic practice and describe in detail only the holotype. The diagnosis contains information derived from the holotype and 54 paratypes and will serve to define the population. Available for direct

\*Natural History Museum, Stanford University, California.

comparison with individuals of the new form were eight examples of *C. c. cerastes* and 18 specimens of *C. c. laterorepens*. The style of description is patterned after that of Klauber (1944, p. 94).

***Crotalus cerastes cercobombus* new subspecies**

*Holotype.* An adult male, number 7287 in the collection of the Natural History Museum of Stanford University. Collected near Gila Bend, Maricopa County, Arizona on April 18, 1929, by Gregory M. Kranzthor and George S. Myers.

*Diagnosis.* A population of sidewinders characterized by having the proximal lobe of the rattle-matrix black in adults; ventrals in males 141 or less, in females 145 or less; scale rows usually 21.

*Description of Holotype.* Standard length (distance from tip of snout to anus) 474 mm.; tail length 43.5 mm.; head length 24.5 mm. Rattle comprised of three segments, incomplete; width of proximal rattle 8 mm. Dorsal scale rows 22-21-17, all but lowermost row on each side keeled. Middorsal scale row and three rows on either side with prominent tubercles. Scale rows around middle of tail 11, all keeled; tubercles faintly evident on central caudal scale rows. Ventrals 138, subcaudals 19, entire. Anal undivided. Supralabials 12-13, infralabials 11-11. Rostral about as wide as high, contacted by six scales: first supralabial and prenasal on each side and a pair of internasals. Internasals and supraoculars separated by three canthals. Other scales on top of head irregular and relatively smooth; about 31 scales on top of head anterior to supraoculars. Minimum scales between supraoculars seven. Nasals divided below but not above, anterior section larger. Loreals 1-1; preoculars 2-2, the upper larger but lower longer; post- and suboculars 7-6. Three rows of scales separate the supralabials from eye. Supraoculars produced into prominent but flexible horn-like processes which extend out above and beyond the eyes; excessively sutured and pitted. Head scales in parietal region faintly tuberculate, becoming keeled and forming regular rows toward the neck.

Head buff above with a grayish tinge produced by many dark punctations which are most heavily concentrated on rostral. Postocular dark stripe brown, dotted with black especially along lower edge. This stripe terminates above last supralabial but does not involve it. A distinctive light dash bordered on each side by black on the supraoculars. Several tan spots in parietal region and on neck. Some supralabials and most lateral head scales heavily punctated with dark pigment. Throat and chin immaculate cream

except for a few punctations on anterior infralabials, mental and anterior tips of chin shields.

Dorsal ground color buff, suffused with grayish punctations. Body blotches tan, some edged with black, 33 in number. Laterally there are three series of irregular dark spots, the lowest involving the edges of the ventrals. Two tan tail spots and four irregular black tail marks. Proximal rattle-matrix lobe black as is second matrix lobe anteriorly.

Belly immaculate except for a few brown punctations laterally, cream or ivory in color. Underside of tail marked with a few black maculations toward rattle.

*Discussion and relationships.* The new subspecies resembles *C. c. cerastes* in lepidosis but can usually be distinguished from members of that form by the black color of the proximal lobe of the rattle-matrix in adults. Rarely (4 per cent) adult *C. c. cercobombus* have the proximal portion of the matrix brown as in typical *cerastes*. Arizona examples of *cercobombus* with a brown matrix are from near Mesa, Maricopa County (LMK 25854) and Sonoita, Pima County (UI 5630) and cannot be separated from the Mojave Desert subspecies. In this regard it should be noted that the two adult specimens from Puerto Libertad (SU 12779) and Puerto Kino (SU 13999) in Sonora, Mexico also have the rattle-matrix brown. These snakes do not differ from *C. c. cercobombus* in any other way and are tentatively referred to the subspecies on the basis of the low ventral and scale row counts. These Sonoran sidewinders might be placed in *C. c. cerastes* if their point of origin were unknown. Additional material may reveal differences which will segregate the southerly Sonoran populations from their northern allies. The southernmost record for the species in mainland Mexico is based upon the head and part of the body of a juvenile from Tastiota, Sonora. It was not possible to make significant scale counts on this fragment.

When compared with *C. c. laterorepens* our new form is well demarcated by the differences in dorsal scale rows and ventrals. The two subspecies share the character of the black rattle-matrix in adults but the scale rows are usually 23 in *laterorepens* and usually 21 in *cercobombus* and the ventrals in *laterorepens* males are 140-149 (average 145), in females 143-154 (average 148.4); ventrals in *cercobombus* males are 132-143 (average 138.7), in females 137-147 (average 142.7). While there is some overlap in these important characteristics it is found upon comparing frequency tables of the counts in *laterorepens* and *cercobombus* that 75 per cent of available material can be definitely referred to the correct subspecies by the number of scale rows and 89 per cent by the number of ventrals. The constancy of these features seems to fully justify the separation of the two populations.

By way of comparison it may be noted that *C. c. cerastes* and *C. c. laterorepens* may be segregated 90 per cent of the time by the number of scale rows and 95 per cent of the time by the ventral counts. These figures tend to verify a suggestion made on the basis of the rattle-matrix color that *laterorepens* and *cercobombus* are more closely allied than the former is to *cerastes*.

Data utilized in the above comparisons on *C. c. cerastes* and *C. c. laterorepens* are from Klauber (1944).

Insofar as we are able to determine, the range of *C. c. cercobombus* does not meet that of *C. c. cerastes*. Intergradation between the new subspecies and *C. c. laterorepens* is indicated in Yuma County, Arizona and northern Sonora. Sidewinders from Yuma County average much lower in the number of scale rows and ventrals than do California *laterorepens* and, while they may be placed in that subspecies, definite *cercobombus* tendencies are evident. The example (SU 10002) of this species from Punta Penasco in northwestern Sonora is a typical male *laterorepens* with 23 scale rows and 146 ventrals. Specimens from Pima County and adjacent Sonora are certainly *cercobombus* although a higher frequency of 22 and 23 scale rows may occur here than elsewhere in the subspecific range. This information suggests that intermediates between the two subspecies may be expected in Arizona from the region west of the western borders of Maricopa and Pima Counties and east of the Mohawk Mountains in Yuma County and in Sonora from between Sonoita and Punto Penasco. If southerly Sonoran sidewinders prove to belong with *cercobombus* other areas of intergradation may be found to exist in Sonora.

The relationships of the three subspecies of sidewinder are not complicated., *C. c. laterorepens* appears to be the most primitive form by reason of the higher scale counts and central geographic position. Quite likely this race is similar to the *cerastes* prototype which probably evolved in the Colorado Desert in response to specialized desert conditions. Evolution of peripheral stocks has taken place through reduction in the number of scale rows and ventrals as the species radiated from the Colorado Desert center. The Mojave Desert form, *C. c. cerastes*, seems to be the oldest outlying stock differing from *laterorepens* not only in the reduced scale counts but by characteristically lacking the black pigment on the proximal lobe of the rattle-matrix. *C. c. cercobombus* is apparently a recently evolved form directly derived from *laterorepens* and not fully differentiated from it.

The new subspecific name is from the Greek meaning -buzzer tail and refers to the rattle.

Figure 1 illustrates the known distribution of each subspecies.

*Material examined.* In this listing the following collections are indicated by these abbreviations: LMK, private collection of Dr. L. M. Klauber; SD,

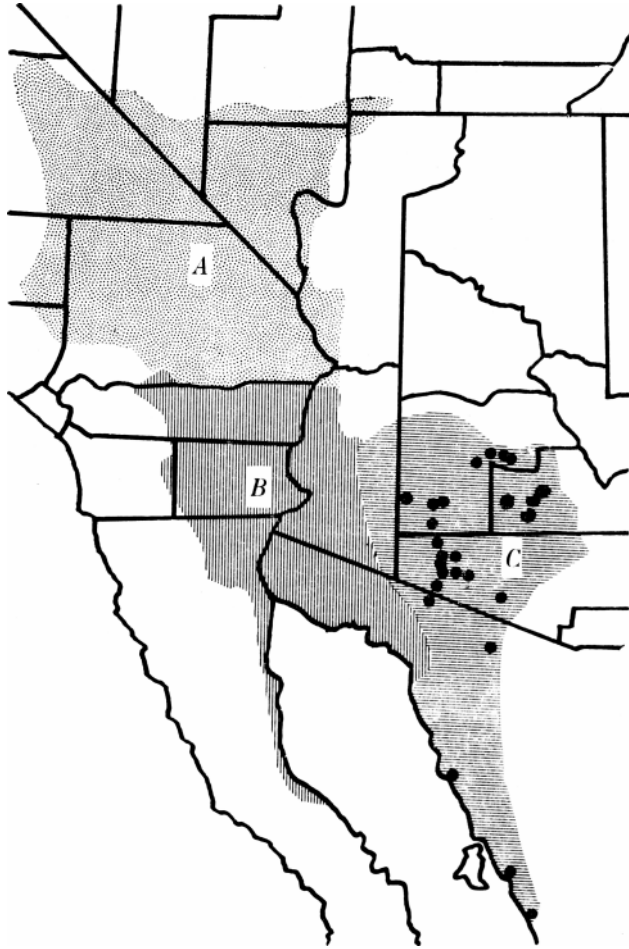


Figure 1. Distribution of the three subspecies of *Crotalus cerastes*. **A.** *C. c. cerastes*. **B.** *C. c. laterorepens*. **C.** *C. c. cercobombus*. In the range of the last the dots indicate localities from which specimens have been examined.

San Diego Society of Natural History; SU, Natural History Museum, Stanford University; UI, University of Illinois.

UNITED STATES. **ARIZONA:** *Maricopa* Co.-1 mi. w. Tartron, LMK 39088; near Gila Bend, SU 7287 (holotype); 10 mi. s. Gila Bend, SD 16939; 26 mi. n. Ajo, LMK 39082; 10 mi. e. Gila Bend, SD 17072; 1 mi. s. Morristown, LMK 26915; 18 mi. w. Phoenix, LMK 979-981; vicinity of Phoenix, LMK 40893; near Mesa, LMK 23879, 23888-23890, 25553-25555, 25854-25857; Desert Wells, LMK 22410-22412. *Pima* Co.-13 mi. n. Ajo, UI 5631; 2 mi. s. Ajo, UI 5632; 5 mi. s. Ajo, III 5628; 6 mi. s. Ajo, UI 6009; 10 mi. s. Ajo, UI 5629; 10 mi. se. Ajo, SU 13997; 12 mi. se. Ajo, UI 5627; 22 mi. s. Ajo, UI 5633; 7 mi. n. Sonoita, UI 5630; 6 mi. n. Sonoita, UI 5626; Sonoita, LMK 38660; 2 mi. e. Gunsight, SU 13998; 10 mi. e. Gunsight, SU 12665; Sells, LMK 2324, 2325. *Pinal* Co.-5 mi. w. Casa Grande, LMK 25499; 4 mi. e. Coolidge, LMK 41110-41116, 41362, 41363; 4 mi. s. Coolidge, LMK 41241; 3 mi. se. Picacho, SD 17068-17071, 17073.

MEXICO. **SONORA:** 5 mi. s. Sonoita, UI 1926; 1 mi. se. Altar, UI 23913; 6 mi. ne. Puerto Libertad, SU 12779; 8 mi. ne. Puerto Kino, SU 13999; Tastiota, SU 12778.

All specimens in the above list, except the holotype and those from Sonora, are paratypes of the new subspecies.

Key to the subspecies of *Crotalus cerastes*.

1a. Proximal rattle-matrix lobe black in adults.

2a. Ventrals in males 141 or less, in females 145 or less; dorsal scale rows usually 21 at midbody *C. c. cercobombus*.

2b. Ventrals in males 142 or more, in females 146 or more; dorsal scale rows usually 23 at midbody *C. c. laterorepens*

1b. Proximal rattle-matrix lobe brown in adults; ventrals in males 141

or less, in females 144 or less; dorsal scale rows usually 21 at

midbody *C. c. cerastes*.

*Acknowledgements.* We are greatly indebted to Dr. L. M. Klauber of San Diego and Dr. George S. Myers of Stanford University for aid and criticisms pertinent to this discussion. We wish also to thank Dr. Hobart M. Smith of the University of Illinois for the loan of material.

**Literature Cited**

Hensley, M. Max

- 1950 Results of a herpetological reconnaissance in extreme southwestern Arizona and adjacent Sonora, with a description of a new subspecies of Sonoran whipsnake, *Masticophis bilineatus*. Trans. Kansas Acad. Sci., vol. 53, no. 2, p. 270-288, fig. 1-4.

Klauber, Laurence Monroe

- 1944 The sidewinder, *Crotalus cerastes*, with description of a new subspecies. Trans. San Diego Soc. Nat. Hist., vol. 10, no. 8, p. 91-126, pl. 6-7, fig. 1, map.

*Natural History Miscellanea*, a series of miscellaneous papers more or less technical in nature, was initiated by The Chicago Academy of Sciences in 1946 as an outlet for short, original articles in any field of natural history. It is edited by the Director of the Academy with assistance from the Scientific Governors' Committee on Publications and other qualified specialists. Individual issues, published at irregular intervals, are numbered separately and represent only one field of specialization; e.g., botany, geology, entomology, herpetology, etc. The series is distributed to libraries and scientific organizations with which the Academy maintains exchanges. Title pages and indexes are supplied to these institutions when a sufficient number of pages to form a volume have been printed. Individual specialists with whom the Academy or the various authors maintain exchanges receive those numbers dealing with their particular fields of interest. A reserve is set aside for future exchanges and a supply of each number is available for sale at a nominal price. Authors may obtain copies for their personal use at the prevailing rates for similar reprints.

When citing this series in bibliographies and in preparing abstracts, authors are requested to use the following preferred abbreviations: *Chicago Acad. Sci., Nat. Hist. Misc.*

H. K. Gloyd, Director

*Committee on Publications:*

Alfred Emerson, Hanford Tiffany, and C. L. Turner.